Keepin' it cool: the science of sweat

This article appeared in the July 20, 2012 edition of the Davis Enterprise.

Keepin’ it cool: the science of sweat

By Lisa Justice

Special to the Enterprise

When your body temperature rises above 98.6 or your body recognizes that the temperature in the surrounding air is higher than the temperature in your body, it’s time to sweat. But what does sweat really do for you? Let’s try an experiment to find out.

Take a damp sponge and use it to moisten the back of one of your hands or one arm. Be careful to keep the other hand and arm dry. You want one wet one and one dry one for comparison.

How does your wet arm feel? How does your dry arm feel? Is there a difference? Now try standing in front of a fan or a breezy window. How does your wet arm feel compared to your dry arm now?

You’re probably noticing that your wet arm feels a bit cooler than your dry arm. Sweat helps cool you down by releasing moisture onto your skin. But that’s not all that’s going on.

On a hot day, your sweat evaporates from your skin taking a little bit of your body heat with it. Take a look at your wet arm. Can you count the number or water drops?

Imagine each of those as a drop of sweat that will evaporate taking a bit of your body heat away. So sweat helps cool you down two ways. First, it makes your skin feel cooler when it’s wet. And when it evaporates it removes some heat.

But sweat will only evaporate in an environment where there isn’t much water in the air. In a place with high humidity, there’re already lots of water molecules in the air. So your sweat won’t evaporate very much because the humid air can’t hold very many more water molecules.

But in a drier environment, like Davis, your sweat has a better chance of evaporating quickly and taking away your body heat. As more sweat evaporates from your body, the air close to you becomes more humid, making it harder for your sweat to evaporate.

But that's where a fan or a breeze comes in handy. Remember how it felt to hold your wet arm in front of the fan? The fan was blowing the more humid air away from you so that your sweat could evaporate more quickly. Now that's cool!

One thing to keep in mind about sweat is hydration. Your body uses a lot of its water to make and release all the sweat it takes to cool you down. If you don't replace that water you can become dehydrated.

Dehydration means that your body doesn't have enough water in it to function normally. If you're dehydrated you can experience headaches or dizziness. Severe dehydration can even make you sick.

So as you sweat, be sure to replenish your body's liquids by drinking plenty of water. Because when it gets hot, you want your body to be able to make plenty of sweat to help keep you cool in lots of different ways.

*